

## **REMARKS/ARGUMENTS**

### **Substance of the Interview**

The Applicants wish to thank the Examiner for the opportunity to have an interview by telephone on November 5, 2003. With reference to MPEP Section 713.04, the following comments will summarize the substance of the interview.

1. No exhibits were shown and no demonstrations were conducted.
2. Claims 5 and 6 were discussed.
3. Smith U.S. 5,403,479 was discussed as prior art.
4. The Applicants proposed amendments to claims 5 and 6 as attached to the Examiner's Interview Summary.
5. Regarding claim 5, the principle arguments made by the Applicants were that Smith '479 did not describe a flow of chemical cleaner in a series of pulses wherein the pulses are separated from each other by waiting periods in which the flow of chemical cleaner is stopped. In particular, the Applicants submitted that any pulses described in Smith were not separated by waiting periods in which the flow of chemical cleaner is stopped. The Applicants further submitted that any pulses described in Smith were directed at enhancing the mechanical action of the backwash rather than with economizing the amount of chemical delivered. Regarding claim 6, the Applicants submitted that, regardless of the nature of the cleaning in Smith '479, Smith '479 teaches only one type of cleaning whereas claim 6 requires two types of cleaning. The Applicants further submitted that, although Smith may describe a form of cleaning that is less intensive than some forms of cleanings performed prior to Smith, the cleanings described in Smith are still intended to produce large increases in the permeability of the membranes and so they are recovery cleanings, as that word is used in the application, rather than maintenance cleaning.
6. No other pertinent matters were discussed.
7. The general outcome of the interview is that the Examiner indicated that he would consider the Applicants' proposed claim amendments and

arguments, although no agreement was reached with respect to the proposed amendments during the interview.

### **Claim Rejections – 35 USC 112**

Claims 1-4, 6-10 and 27-38 were rejected as being indefinite for language used in claims 1, 6, 27 and 33.

Claims 1, 27 and 6 were rejected for reciting "recovery cleanings". The reference to the "recovery cleanings" has been replaced simply with a reference to "first cleanings". In claims 6 and 27, a reference has additionally been added to the first cleanings increasing the permeability of the membranes. Accordingly, the first cleanings are now defined in all claims by reference to their providing an increase in the permeability of the membranes. Also, in claim 1, a part (iv) has been added stating that the first cleanings are more intensive than the cleaning events. A similar statement was already provided in claim 6. The Applicant submits that the description of the first cleanings in the amended claims is not indefinite.

The Examiner further objected that it was unclear in claims 1, 6 and 17 whether the first cleaning are less or more frequent than the cleaning events. In claim 1, the cleaning events are said to occur between first cleanings. This requires that the cleaning events are at least as or more frequent than the first cleanings. In claim 6, the cleaning events are repeated between 1 and 7 times per week whereas the first cleanings are performed at least 15 days apart. This requires that the cleaning events are more frequent than the first cleanings. In claim 27, the first cleanings are performed at least 15 days apart from each other whereas the cleaning events are performed at least once a week, which requires that the cleaning events are more frequent than the first cleanings.

Claim 33 was rejected because it was unclear how performance would decrease between the steps (a), (b) and (c). Claim 33 has been amended to refer to performances of step (B) rather than performances of steps (a), (b) and (c) to make the meaning of the claim clearer.

### **Claim Rejections – 35 USC 103**

All claims were rejected as being obvious in view of Smith '479 in view of Applicants admission of known prior art. The Applicants submit that the claims, as amended, are not obvious.

Regarding claim 1, the Office Action suggests that line 9 of the table in column 15; column 11, lines 30-35; and, column 15, lines 34-36 disclose a weekly CT of 6,000 Min•mg/L. The Applicants respectfully submit that these references do not disclose such a weekly CT. The table in column 15 is a listing of different chemicals that may be used in the cleaning solution. The table at column 15 does not give a duration of any cleaning process and, in particular, does not state that 100 ppm of NaOCl would be used for 60 minutes. Column 11, lines 30-35, states, as a general proposition, that cleaning events in Smith might occur over a period of time that is preferably less than one hour. This statement is not linked to any particular chemical or concentration and so cannot be used as the basis for any calculation of a CT. Similarly, column 15, lines 34-36 also state a general proposition that 10 ppm is the lowest NaOCl concentration that might be effective but, since this statement is not linked to any particular cleaning regime, it cannot be used in any calculation of a specific CT. In summary, the cited references do not teach any particular CT as claimed.

The Office Action also suggests that Smith describes cleaning events which reduce the rate of decline of membrane permeability. However, claim 1 requires cleaning events that reduce the rate of decline of the membranes between first

cleanings which increase the permeability of the membranes. This feature is not provided in Smith.

The Office Action acknowledges that Smith does not teach the definition of CT as in claim 1(c)(i). However, the Office Action suggests that this is only a mathematical expression, "for the convenience of the inventors". The Applicants submit that the presence of the CT parameter in the claim is not merely a convenience but follows the Applicants' teaching that the CT parameter, and not C or T alone or other parameters, is a feature of the invention. In contrast, Smith discusses C and T parameters independently and does not teach the use of their product.

The Office Action next notes that Smith discusses various other prior art methods of cleaning in its "Background of the Invention". The Office Action suggests that these references can be considered since, even though Smith discourages their use, a reference is no less anticipatory if the reference, after disclosing the invention, then disparages it. However, the current claims are not anticipated by Smith as acknowledged by the Office Action which rejects the claims only under Section 103. Since the claims are not anticipated, the *Celeritas* case does not apply.

Finally, in relation to claim 1, the Office Action acknowledges that Smith does not teach performing recovery cleaning from time to time and, between recovery cleaning, performing one or more cleaning events as in claim 1. The Applicants submit that this conclusion remains true with the amendments to claim 1 referring now to first cleanings instead of recovery cleanings. Further, the Applicants submit that the characterization of Applicants "admission" of known processes is not accurate. The Applicants did describe, as prior art, various processes which the Applicants labeled as recovery cleaning. The Applicants did not describe any prior art processes as providing recovery cleaning or a combination of recovery cleaning and maintenance cleaning. The Office Action may dispute the

Applicants' statement that Smith taught recovery cleaning. However, such a dispute does not create any admission. Instead, the Office must still find teaching in Smith of a process as defined in claim 1. However, Smith does not teach a combination of two types of cleanings as in claim 1. Smith also does not suggest a combination with the method proposed by Smith and any other method known in the art. In contrast, Smith teaches that the method taught in Smith replaces, not enhances, other methods known in the art and that any other method will cause too much damage to beneficial microbial populations and should not be used. Accordingly, the Applicants submit that the Office Action fails to meet the burden of the Office to make a prima facie case of obviousness.

Regarding claims 2 to 4, the Examiner argues that the CT values result from merely optimizing the value of a result effective variable in a known process. However, Smith did not teach the process of claim 1 on which claims 2 to 4 depend. Accordingly, claims 2-4 do not relate to a known process and the cases cited in the Office Action do not apply. Further, the CT values claimed result in a reduced decline in permeability between first cleanings. In contrast, Smith teaches that any cleaning variables should be chosen to provide the maximum cleaning possible while killing up to 20% of the living bacteria in the water being treated. Since Smith teaches a concept of "optimum value" that is not related to the claimed process, the CT parameters claimed are not obvious.

Regarding claim 5, the Examiner submits that Smith teaches pulsed flow at column 11, lines 35-50 and wait periods defined as a soak at column 14, lines 55-60, or blocking the flow of solution in column 12, line 68, to column 13, line 5. The Applicants submit that these references do not teach a pulsed flow of chemicals separated by wait periods as described in claim 5. In particular, column 14, line 55-60, is part of a discussion on the choice of biocidal solution and has no connection to an optional pulsed chemical delivery. Column 11, lines 35-50, describe an optional process of chemical delivery in which the pressure may be deliberately varied within a period of less than 5 seconds, preferably less

than 1 second. The discussion at column 14 has nothing to do with the discussion at column 11. There is no teaching of a wait or soak period interspersed with pulses. In contrast, the pulsing, which occurs in a time period of less than 5 seconds, preferably less than 1 second, leaves no room for any soak or wait period. Similarly, the discussion at column 12, line 68, to column 13, line 5, merely describes how the chemical can either be circulated through the module or put into the module in a dead end fashion by blocking the flow of biocidal solution out of one end of the module while still flowing chemical into the other end of the module. Again, this discussion has nothing to do with the pulses described at column 11 and, in particular, does not describe blocking the flow of solution to the module in between pulses.

Regarding claim 6, the Office Action suggests that having the first cleanings 15 days apart is merely an obvious optimization of a result effective variable in a known process. The Applicants submit that, since the process of having first cleanings and cleaning events is not known in the art, a condition required for the application of *In re Boesch* etc. is not present.

Regarding claims 7-10, the Applicants repeat and rely on their comments in relation to claims 2-4.

Regarding claims 11-12, the Applicants submit that these claims do not relate to a known process and so the doctrine in *In re Boesch* etc. does not apply.

Regarding claim 13, the cited reference from Smith provides no teaching of a waiting period between a pulse as claimed.

Regarding claim 14, the Office Action submits that Smith discusses pulsing pressure in the range of claim 14. However, since Smith does not disclose pulses separated by waiting periods as claimed, Smith cannot disclose a pressure in the pulses as claimed. Instead, Smith teaches a different form of "pulsing". In the

Smith form of pulsing, the values cited in the Office Action describe minimum pressures. The maximum pressures taught in Smith are said to be "generally higher than about 300 kPa". This teaching does not teach the additional element of claim 14.

Regarding claim 15, the Office Action states that the flow rate of the membranes is inherently the same in Smith. Claim 15 has been amended to correct a typographical error to remove "/bar" which did not correspond with page 15, line 6 of the specification. Claim 15, as amended, does not refer to a flow rate as a characteristic of the membrane, but a flow rate of chemical during a pulse step. Accordingly, the flow rate claimed is not a characteristic of the membranes and the inherency argument in the Office Action does not apply.

Regarding claims 16 and 17, the Office Action points to column 12, lines 64-66 of Smith regarding withdrawing the electrolyte from the lumens of the membranes before re-establishing normal operation. However, claims 16 and 17 do not refer to withdrawing permeate or chemical cleaner from the lumens, but instead refer to removing chemical cleaner from the tank as retentate. Since Smith teaches against draining the tank, the elements of claims 16 and 17 are not only not provided in Smith, they are actually taught against by Smith.

Regarding claims 27 to 32, the Applicants repeat the arguments made in respect of claims 1 to 6.

Regarding claim 33, the Examiner notes that the recovery of permeability in Smith is at least 70% of the initial flux in Smith. However, since claim 33 refers to a decrease in permeability between one performance of step (B) of claim 27 as compared to the increase in permeability of the membranes after a performance of step (B) of claim 27, the reference cited in Smith is not relevant and fails to teach the elements of claim 33.

Regarding claims 34 to 35, these claims depend on claim 1 and are valid at least for that reason. Further, in relation to claim 35, the membranes are not agitated during step (B)(b) of claim 1. Since Smith teaches no step (B)(b) as in claim 1, Smith cannot teach the element of claim 35 either. Further, in relation to agitation, the Office Action notes that column 17, line 22, in Smith teaches providing air for maintaining the beneficial bacteria. Smith does not say that this air is turned off during the cleaning steps. Since the air is required for maintaining the beneficial bacteria, it is logical to assume that the air would not be turned off unless Smith says that it is. Since the Office Action makes an obviousness rejection, and Smith does not say that the air is turned off and instead gives a reason why the air should remain on, the Applicants submit that Smith cannot be used to reject a claim stating that the membranes are not agitated during cleaning events. The Office Action notes that Smith also teaches a cleaning method for membranes within a housing, but claim 35 refers to membranes immersed in an open tank. Further, the apparatus described in Smith at Figure 5, column 17, lines 57-68 has an axial flow of dirty water (see column 18, lines 1-4) which agitates the membranes.

Regarding claim 36, the Office Action notes that Smith provides chemical cleaner in a tank which is then flowed to the system. Claim 36 describes introducing a chemical cleaner to flowing water, not introducing chemical cleaner to a tank and then flowing the mixed water and chemical cleaner from the tank. The Applicants submit that the two methods are not equivalent as suggested by the Office Action. Further, since the Office Action has provided no teaching in Smith towards a change from the method disclosed in Smith to the method disclosed in claim 36, there is insufficient basis in the Office Action for rejecting claim 36.

Regarding claim 37, the Examiner again submits that choosing cleaning events to have about the same CT is merely optimizing a result effective variable in a known process. However, choosing to make all cleaning events have the same CT does not involve optimizing any variable. Further, since the process which is



being controlled in claim 37 is not a known process, the case cited in the Office Action does not apply.

Regarding claim 38, the Office Action acknowledges that Smith teaches that draining a tank after a cleaning step is not preferred. The Examiner then refers to the *Celeritas* case stating that a reference is no less anticipatory if, after disclosing an invention, it disparages it. However, since Smith is not an anticipatory reference over claim 38, the *Celeritas* case has no application to claim 38. In an obviousness rejection, which is the only rejection made in the Office Action, the fact that a reference disparages a claimed element is clear evidence that the claim is not obvious. Further, for the *Celeritas* doctrine to apply, the cited reference must disclose all elements of the claim in combination. Smith does not provide all elements of any claimed combination.

For the reasons above, the Applicants submit that the claims are allowable.

Respectfully submitted,

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